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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/784,057	02/16/2001	Michio Asukabe	202593US0	4856

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EXAMINER
PADGETT, MARIANNE L

ART UNIT	PAPER NUMBER
1762	10

DATE MAILED: 01/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

MK-10

Office Action Summary	Application No. 09/764,057	Applicant(s) Asukabe et al
	Examiner M.L. Parkert	Group Art Unit 1762

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

☒ Responsive to communication(s) filed on 11/29/02.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 1-23 is/are pending in the application.

Of the above claim(s) 1-12 & 21-23 is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 13-20 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

☒ All ☐ Some* ☐ None of the:

☒ Certified copies of the priority documents have been received.

☐ Certified copies of the priority documents have been received in Application No. _____.

☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____.

Attachment(s)

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 5, 6

☐ Interview Summary, PTO-413

☒ Notice of Reference(s) Cited, PTO-892

☐ Notice of Informal Patent Application, PTO-152

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Other _____

Office Action Summary

1. Applicant's election with traverse of Group II, process claims 13-20 in Paper No. 9 is acknowledged. The traversal is on the ground(s) that the office has not shown that the product can be made using H_2O_2 or O_3 instead of plasma treating. This is not found persuasive because the chemical environment produced by an oxidizing plasma, includes reactive species such as O_3, etc., depending on the gaseous oxidizing sources, so since analogous chemical environments can be supplied from other sources than plasma, such as heating or photo-activating an O_3 atmosphere, the equivalent chemical reactions may proceed by different process that supply like oxidation species. Note, the patent to Hubbard et al (col. 5, lines 49-64) lists various oxidation pretreatments for polyolefin.

The requirement is still deemed proper and is therefore made FINAL.

2. The IDS of February 16, 2001 & 7/02/01 are made of record, however no copy of the Japanese patent in the first IDS was found, so it is relevance could not be reviewed.

3. Claim 14 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. In line 2 of independent claim 13, the requirement that the precursor membrane comprise a polymer was already required.

4. Claims 13-20 are objected to or rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In the last line of claim 13, "the side chain" is objected to as having improper antecedent basis, since only "a side chain polymer" (emphasis added) was previously introduce.

In claim 14, the article "a" before polymer is improper for a previously introduced limitation.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 13-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nezu et al (5,817,718), in view of Kono et al and/or Hubbard et al and/or Goldberg et al.

Nezu et al (718) makes solid polymer electrolyte membranes, using synthetic resins inclusion of fluorinated olefin polymers, such as PTFE or ethylene-tetrafluorethylene (ETFE), which are graft-polymerized using various styrene compounds to produce the claimed side chains (abstract; col. 3, lines 13-20). After the side chain polymer is grafted, a sulfuric group ($-SO_3H$) is introduced into the side chain reading on the claimed proton conductive group (col. 4, line 53- col. 5, line 16; col. 6, lines 1-30; col. 8, lines 46-61). In order to aid the graft polymerization, Nezu et al (718) teach irradiating the polymer membrane using rays, such as gammer rays or electron beams (EB) in order to produce radicals on the polymer surface which are starting points for the grafting (col. 3, lines 35-52; col. 4, lines 24-37; and col. 8, lines 19-32). Nezu et al (718) differs from the present claims by using X-rays or EB to pre-treat the membrane, instead of an oxidative atmosphere in plasma.

Kono et al also teaches graft polymerization of polymer monomers, such as divinyl benzene, etc. (col. 5, line 63-col. 6, line 18), to radiation pretreated polyolefin membranes, whereas EB and γ-ray pretreatments are taught as equivalent alternatives to plasma pretreatment. The plasma aided graft polymerization is taught to employ atmospheres of Ar, He, N_2 or air, and notice is taken that air provides an oxidative atmosphere. It would have been obvious to one of ordinary skill in the art to use air plasma pretreatments in Nezu et al, given the equivalence of EB, γ-ray and air-plasma,

radiation treatments to enable graft polymerization of polyolefin's as taught in Kono et al, because they have been shown to be equally effective in analogous situations.

Alternatively, Hubbard et al, who teach priming polyolefin surfaces with primers that include poly (hydroxystyrene), before further coating (abstract; col. 2, lines 15-34+; col. 5, lines 25-43), disclose that the polymer articles are usually plasma treated to improve their wettability by the priming solution, or alternately corona-treated (a different type of plasma) or chemically oxidized, etc. (col. 5, lines 49-65; & claims 1-3). Given these teachings, it would have been obvious to one of ordinary skill in the art that plasma oxidation of polyolefin materials, was an effective pretreatment for subsequent deposition of polystyrene materials, because plasma pretreatment and oxidation were shown to be advantageous in improving wettability, thus coating of such substrates. Furthermore, Kono et al specifically shows use of air-plasmas for aid in grafting polymers on membranes substrates as claimed, while Hubbard et al shows plasma with suggested oxidation on substrate materials as taught by Kono et al, and for attaching thereto polymers as claimed, thus particularly showing the expected effectiveness of plasma pretreatment and oxidation for both polyolefin membrane substrates, and a styrene based branched polymer to be deposited.

Alternately, Goldberg et al teach the need to glow discharge plasma treat polymeric surfaces inclusive of polyolefins and fluorocarbons (fluorinated polyolefins), such as polypropylene or polyethylene or PVDF or PTFE or polyperfluoroethylene-polypropylene (FEP), etc., with glow discharge plasma (GDP) to activate or oxidize the surface, before proceeding with a graft polymerization reaction thereon (abstract;

summary; col. 8; col. 9, lines 14-28; col. 10, lines 7-19 & 45-68; and Example 3+ Table 4 on col. 13 with Ar or O_2 plasma treating PP or FEP substrates). Note the pretreatment of these materials, is advantageous to a wide variety of monomers to be grafted, including aminostyrene (col. 8, line 14). It would have been obvious to one of ordinary skill in the art, that given the demonstrated advantages of plasma oxidation prior to grafting on either fluorinated or non-fluorinated polyolefin, that plasma oxidation pretreatment would have been expected to be equally advantageous and effective as the pretreatment in Nezu et al. Note, considered cumulatively with Kono et al or Hubbard et al, Goldberg et al shows the equlivance of treatment of fluorinated and non-fluorinated hydrocarbons or polyolefins.

7. Claims 13-20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 6-7, 11-13, 15-16 and 19-21 of U.S. Patent No. 6,242,123 B1 in view of Kono et al and/or Hubbard et al and/or Goldberg et al. The patented claims differ from the application claims either by not requiring any oxidative plasma pretreatment, or by using γ-ray to pretreatment. The secondary references were discussed above, and differences between Nezu et al (123 B1) claims and Nezu et al (718) disclosure are analogous, hence so are the reasons for obviousness.

8. Other art of interest includes Williams which is equivalent to Goldberg et al for teaching oxidizing plasma (but the corona variety) of both fluorinated or non-fluorinated polyolefin; Iwasaki et al and Morigaki et al, are both cumulative too the above rejections, for teaching polyolefin membranes for batteries, where plasma

oxidation is employed either in preparation for subsequent sulfonation, or for subsequent gel polymer coating, respectively. Note, Iwasaki et al requires the surface layer to be more suspectable to sulfonation.

9. Any inquiry concerning this communication from the examiner should be directed to M. L. Padgett whose telephone number is (703) 308-2336. The examiner can normally be reached on Monday-Friday from about 8:30 a.m. to 4:30 p.m..

The fax phone numbers for the organization where this application assigned are (703) 872-9310 (regular) and (703) 305-6078 (informal).

M.L. Padgett/dh 1/16/03
January 17, 2003

MARIANNE PADGETT
PRIMARY EXAMINER